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BUREAU OF
ENTOMOLOGY AND PLANT QUARANTINE
NEWS LETTER

VOLUME VIII 12

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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

NEWS LETTER

FOR OCTOBER 1941

Vol. VIII, No. 12 (Not for publication) December 1, 1941

ADMINISTRATION

Bishopp and Spencer Appointed Assistant Chiefs

On November 9, 1941, Fred C. Bishopp and Frank H. Spencer were appointed assistant chiefs of the Bureau, Dr. Bishopp to be in charge of the Bureau's research work and Mr. Spencer to be in charge of business administration.

Dr. Bishopp has been with the Bureau since 1910, when he began investigations on the cotton boll weevil. The following 2 years he worked on tick investigations. He spent the next 5 years studying insects that affect the health of animals. In 1917 he was made chief of the Division of Insects Affecting Man and Animals and continued in that position until his recent appointment. Prior to entering the Bureau he was assistant professor of entomology and assistant State entomologist in Maryland.

Mr. Spencer entered Government service in 1917 as personnel clerk in the Bureau of Animal Industry. From 1919 to 1921 he served in the Bureau of Markets and in the Division of Publications of the Department. He was secretary to the Director of War Finance Corporation in 1921-22. From 19[illegible] to 1931 he was administrative assistant and secretary to the Secretary of Agriculture. From 1931 to his recent appointment he has been business manager of the Bureau.

Dr. P. N. Annand, Chief of the Bureau, has announced that it is planned ultimately to abolish the position of business manager, vacated by Mr. Spencer, and to create two divisions dealing with business operations; i. e., a Division of Finance and Business Services and a Division of Personnel. In the meantime B. Connor, as acting business manager, is in immediate charge of the work relating to the business operations of the Bureau.

Cushing Appointed Chief of Division

Emory C. Cushing has been appointed to succeed F. C. Bishopp as chief of the Division of Insects Affecting Man and Animals. Mr. Cushing entered the Bureau in 1923, after serving on the staff of the Texas Agricultural Experiment Station. His work with the Bureau has been largely devoted to investigations of insects affecting man and animals and for several years he was assistant Division leader. It was due to his efforts that the true screwworm was identified, revolutionizing the control of this very important pest of livestock.

OBITUARIES

John N. Summers Dies

John Nicholas Summers, administrative officer of the Division of Gypsy Moth and Brown tail Moth Control, died suddenly of an acute heart attack at Greenfield, Mass., on the evening of October 13. He was born at Brockton, Mass., on January 25, 1884, attended the Brockton public schools, and graduated from the Massachusetts State College in 190[illegible] with the degree of Bachelor of Science, majoring in entomology. He received the degree of Doctor of Philosophy from the same institution in 1911.

Mr. Summers was appointed to the Bureau of Entomology on June 16, 1911, as a scientific assistant and later as entomologist. In 1914 he spent several months in Europe collecting and shipping parasites of the gypsy moth to this country. During the World War he enlisted in the U. S. Army Tank Corps and served from May 191[illegible] to August 1919, after which he returned to the Bureau. In 1922 he spent 6 months in Japan and returned to that country for a similar period in 1923, where he collected and shipped parasites of the gypsy moth to the United States. He was in charge of the quarantine and inspection work of the Plant Quarantine and Control Administration's Gypsy Moth Project from January 19[illegible] to January 1934. Since 1934 he carried on work for the Division of Gypsy Moth and Brown-tail Moth Control. He was active in church, the American Legion, and civic organizations, as well as national and local entomological societies, and was highly respected by all who knew him.

Mr. Summers is survived by his wife and a son, John N., Jr.

Edwin W. Cook Dies

After a brief illness, Edwin W. Cook, of the Division of Fruit Insect Investigations, died on October [illegible]7 at Vincennes, Ind. He was born on October 23, 1904, and was reared on a farm near Bentonville, Ark. In 1924 he was employed as a field assistant to the late A. J. Ackerman at the Bentonville, Ark., laboratory. He worked there practically every summer until 1933, when the laboratory was discontinued. The following year he was assigned to duty at St. Joseph, Mo., where he served during the active season each year until 1941, when he was transferred to Vincennes because of suspension of the work at St. Joseph. During the winter of 1939-40 he was also employed on citrus canker work by the Division of Domestic Plant Quarantines. Mr. Cook was a quiet, unassuming, reliable worker of a group which plays an important part in the accomplishments of the Bureau.

BUREAU EMPLOYEES CALLED TO THE COLORS OR TRANSFERRED TO SPECIAL NATIONAL DEFENSE ASSIGNMENTS

Bruce, W. G., Assoc. Ent., Insects Affecting Man and Animals, to serve as liaison officer. Mr. Bruce has been selected to serve as the contact representative for cooperation between the Bureau and Defense agencies in making field surveys on which to base control operations to be used in military reservations and adjacent areas against a wide variety of insects inimical to the welfare of military personnel. His headquarters will be located at some convenient point in the Southeastern States.

Cassell, Thomas L., Asst. Clk.-Stenog., Insects Affecting Man and Animals, inducted, Select. Serv., August 16, 1941.

Dorick, Stanley J., Asst. Clk., Pl. Dis. Control, inducted, Select. Serv., November 14, 1941.

King, W. V., Sr. Ent., Insects Affecting Man and Animals, Major, Sanit. Corps Resv., called to active duty November 1[illegible], 1941, Fourth Corps Area Laboratory, Fort McPherson, Ga.

Smith, James N., Asst. Pl. Quar. Insp., For. Pl. Quar., U. S. A. Resv., ordered to active duty October 6, 1941.

FRUIT INSECT INVESTIGATIONS

Flight habits of grape leaf folder. Use of a rotary net in a vineyard during the night of August 15-16, when the third brood of adults of *Desmia funeralis* (Hbn.) were numerous, supplied data about the activity of both sexes. Sunset was at 6:51 p. m.; sunrise at 5:1[illegible] a. m. There was little activity until darkness in the evening, and flight practically ceased at dawn. The following table shows the flush of flight of the females in the evening and the long-continued activity of the males. Collections were made at intervals of 15 minutes. The work was done by Dwight F. Barnes and Oscar G. Bacon, of the Fresno, Calif., laboratory.

Time interval	Temperature range	Males	Females
p. m.	F.	Number	Number
6:15 - 6:45	85 - 89	[illegible]	3
7:00 - 7:45	82 - 85	15	21
8:00 - 8:45	80 - 82	65	120
9:00 - 9:45	79 - 80	54	43
10:00 - 10:45	80 - 81	[illegible]	17
11:00 - 11:45	79 - 82	57	21
a. m.			
12:00 - 12:45	79 - 80	78	8
1:00 - 1:45	75 - 78	72	9
2:00 - 2:45	73 - 76	[illegible]	11
3:00 - 3:45	75 - 76	[illegible]	11
4:00 - 4:45	74 - 76	52	18
5:00 - 5:30	71 - 73	[illegible]	1

Rearing Oriental fruit moth parasites.--In a previous issue of the News Letter (v. VIII, No. 9, p. 2, Sept. 1, 1941) success in breeding Macrocentrus ancylivorus Roh. under field cages over strawberry was reported. H. W. Allen, of the Moorestown, N. J., laboratory, now reports further details. These parasites can be bred at the rate of 400,000 to 625,000 per acre in a section where it is unusual to obtain more than 35,000 per acre from a natural population. In breeding these parasites 3 types of field cages are being used, each of which is suitable to a particular combination of conditions. These may be briefly described as: (1) Large rectangular cages on frames of posts and wire; (2) large hoop cages covering 2 rows; and (3) small hoop cages covering 1 row. The initial cost of materials required to cover 1,000 square feet of strawberry is $15.51 for the large rectangular cages, $20.09 for the small hoop cages, and $27.[illegible] for the large hoop cages. Much of the material can be used for several seasons, therefore the cost per year on a 5-year basis is much less, being $5.73 for the large rectangular cages, $10.88 for the small hoop cages, and $9.54 for the large hoop cages. It was found that 14,500 M. ancylivorus adults can be produced in a year from each 1,000 square feet of caged strawberry.

MEXICAN FRUITFLY CONTROL

No fruitflies found in Texas.--The 1941-42 harvesting season for citrus fruit produced in the area regulated under Quarantine No. 64 opened on October 1. By the close of the month shipments exceeding 2,900 equivalent carlots had been certified for movement. Normally, a few fruitflies are trapped and some larvae have been found in the month of October, but this season no adults or larvae of the Mexican fruitfly were found in Texas. A few flies and some larvae, however, were collected in the border towns in Mexico. Weather conditions were favorable for fruit development, as well as the development of citrus rust mites. Rust mites were active enough throughout October to necessitate dustings in every district. No other citrus pest was reported as being unusually active.

CEREAL AND FORAGE INSECT INVESTIGATIONS

Parasitization of sugarcane borer in Florida.--J. W. Ingram and E. K. Bynum, of the Houma, La., laboratory, made examinations for borer parasitization in southern Florida during the latter part of September. At Fellsmere, in 1-hour examinations in each of nine representative fields the following average percentages of parasitization were found: *Lixophaga diatraeae* (Towns.), 47.1; *Bassus stigmaterus* (Cress.), 4.7; and *Metagonistylum minense* Towns., 1.3; or a total parasitization of 53.1 percent. These percentages included both emerged and unemerged stages and for unemerged stages alone, or present parasitization, the percentage was [illegible]. The first two parasites are known to overwinter at Fellsmere, and *M. minense*, undoubtedly, also overwinters there. The overwintering parasites have been supplemented by the breeding and release of large numbers of *Lixophaga* and of some *M. minense* during the spring months by L. C. Scaramuzza and W. E. Douglas. These men are employed for that purpose by a sugarcane cooperative which controls about [illegible],000 acres of sugarcane near Fellsmere. Six fields in the vicinity of Lake Okeechobee were examined but borer parasites were found in only two. In one field parasitization by *Bassus* was 4.5 percent; in the other parasitization by *Bassus* was 36.5 percent and by *M. minense* 7.[illegible] percent, making a total parasitization of 4[illegible].2 percent in that field.

Amazon fly breeding work.--By means of artificial inoculations in 1941 up to the end of September, T. E. Holloway and Ralph Mathes reared 3,[illegible]45 adult Amazon fly parasites of the sugarcane borer. A total of 2,[illegible] of these flies were released in 1 sugarcane area near Houma to determine whether mass releases of this parasite will give some degree of borer control during the same season released. During May and June a shipment of [illegible] mated females was sent to L. C. Scaramuzza at Fellsmere, Fla., and 50 mated females to J. W. Wilson at Belle Glade, Fla. From this material they bred and released large numbers of Amazon flies in Florida sugarcane fields.

Vector of chlorotic streak disease of sugarcane found.--J. W. Ingram, W. E. Haley, and L. J. Charpentier, of the Houma, La., laboratory, in cooperation with the Sugar Plant Division of the U. S. Bureau of Plant Industry, exposed the following numbers of healthy sugarcane plants to the following species of insects which had fed on sugarcane plants infected with chlorotic streak disease: *Draeculacephala portola* Ball, 5[illegible]; *Sipha flava* (Forbes), 1[illegible]3; *Hysteroneura setariae* (Thos.), 124; *Aphis maidis* Fitch, 4[illegible]; and *Toxoptera graminum*, 5. By the end of September [illegible] of the plants exposed to *D. portola* had developed chlorotic streak disease. None of the plants exposed to the other species of insects have developed the disease and all untreated check plants have remained healthy. Chlorotic streak disease, which was only recently found in Louisiana, occurs in a number of foreign countries. *D. portola* is the first known vector of this disease.

Rice and corn in adjacent fields show increased borer infestation.--W. A. Douglas, of the Crowley, La., laboratory, reports that during 1941 the average percentage of cornstalks infested by sugarcane borers in 10 fields adjacent to rice stubble was 9[illegible] percent, whereas the average for the same number of cornfields located at least 1 mile from rice was 20 percent. In 10 fields of growing rice adjacent to corn the average percentage of culms infested was 3.6, whereas in 10 rice fields located at least 1 mile from corn the percentage of rice culms infested was 1.3

Field status of European corn borer parasites in Lake States area. W. G. Bradley, Toledo, Ohio, reports that surveys conducted at the close of the 1940 season showed four exotic parasites to be present in the Lake States area. Lydella stabulans var. grisescens R. D. was recovered at all points in the vicinity of marshland near the Lake Erie shore, the abundance of the parasite being dependent on the distance of the point from marshland. An increase in parasitization by this tachinid was shown in the immediate vicinity of the release points at Perkins Township, Erie County, Ohio, and Erie Township, Monroe County, Mich. At the former point parasitization by this species averaged 48.5 percent, and 85.1 percent of the borers in one collection were parasitized by this species. Eulophus viridulus Thoms. was found to be widely dispersed in four counties in Ohio south of Toledo. This chalcid was not abundant at any point. Inareolata punctoria Roman appeared in collections of host material from the Cattaraugus Indian Reservation, N. Y., in encouraging numbers. It was not recovered at any other point in the area. Macrocentrus gifuensis Ashm. was recovered in collections from the Adams Township, Lucas County, Ohio, release point, showing initial establishment following a release at this locality during the current season

JAPANESE BEETLE CONTROL

Drought delays shipments of nursery stock. Movement of nursery stock from most of the Japanese beetle regulated area was limited to the shipment of bare rooted stock, as digging of stock with soil balls was almost impossible, owing to the prolonged dry spell. Calls were received from purchasers who had received balled stock for replacements. Stock in plots that were treated with arsenate of lead prior to July 1 was still awaiting digging at the end of the month. The nurseries did not wish to take the risk of digging balled and burlapped stock under the dry conditions. Notwithstanding the drought, nurseries in the Westminster, Md., area had a busy month. Express and freight shipments were heavy. A number of planting jobs were canceled because of the water shortage. Several attempts to collect beetle grubs for use in testing by the treating section of the Division were made in Maryland, but the ground was so hard that it was practically impossible to dig with forks. The few grubs collected were found about 10 inches below the surface. On the Eastern Shore of Maryland and Virginia, during the dry weather prior to the rain of October 27 and 28, the first in 58 days, the carbon disulfide treatment was frequently used. By the use of this treatment, which required 4½ gallons of water to an 18-inch collar, the nurserymen were able to dig evergreens balled and burlapped, because the water caused the soil to adhere to the roots. Reports from New Jersey indicate that the unusually dry conditions have seriously handicapped the nursery business, greatly increasing the cost of digging. Some nurseries used picks to loosen the soil. One nurseryman even tried an air hammer in his digging. Nurserymen tried to have customers agree to spring delivery of stock.

Japanese beetle prevention in Canada.--The Canadian Division of Entomology News Letter for August-September 1941 contains the following account of beetle-control activities in that country: "At Halifax, Yarmouth, Saint John, and Montreal work on this project was completed and the traps were collected and stored by the end of the second week of September. At Niagara Falls and Windsor scouting and trap attendance was continued throughout the month. At Niagara 4 beetles were collected in traps and 5 by scouting. At Halifax 4 beetles were taken from boats entering the harbour. At Windsor 42 properties were found to be infested in the newly infested area. In this area a total of 170 beetles has been taken, 65 in traps and 105 by scouting. Between August 6 and 14 a total of 97 traps were taken from other sites and placed in this area and other plans were made for controlling the infestation. By the end of September 275 live and 255 dead beetles had been found in all districts concerned." During October L. L. Reed, of the Plant Protection Division, Canadian Department of Agriculture, visited the arsenate of lead treating operations at Newark, N. Y., for the purpose of familiarizing himself with the methods and procedures followed by this Division in Japanese beetle control. Mr. Reed also spent some time at the Bloomfield divisional headquarters, and conferred with the treating section at Trenton. He visited the research laboratory of the Bureau at Moorestown, N. J., and spent some time at the Division's suboffice and the Port Inspector's office in New York City. While in Bloomfield he also looked over some of the Dutch elm disease eradication operations.

Fall treatments of soil for Japanese beetle control.--Over 400 acres were treated with arsenate of lead for control of isolated Japanese beetle infestations in October. Work started in Chicago and Highland Park in August and September was completed during the month. Treating was also completed in Elkhart and Hammond, Ind., but was still in progress at Terra Haute at the end of the month. A few acres were treated in Birmingham, Mich., with operations continuing in Detroit into November. A small amount of treating was completed at the St. Louis, Mo., Airport in October. Operations were carried to completion at Newark, N. Y., where a total of 59.4 acres were covered. Treating work got under way in High Point and Winston Salem, N. C., with work at these points and at Greensboro, where the operations started in September, continuing into November. Crews in Conneaut and East Conneaut, Ohio, completed 45 acres of the area to be treated in these localities. Lead arsenate treating is scheduled for all infestations of importance in North Carolina, except at Asheville, and at all 10 localities in which beetles were trapped outside the regulated area in Ohio. Fall soil treatments, started in August and extending through October, have thus far been applied to 590 acres.

Many trees in timber stand infested with Dutch elm disease carriers.--An unusually large number of infested elms and trees subject to infestation are being found in a dense stand of timber in Montgomery County, Pa., about 1,000 feet south of Swamp Creek and 2 miles southwest of Zieglerville, Pa. *S. multistriatus* has attacked these elms very heavily. It appears that during the spring and summer a number of these elm trees were cut down by a farmer for lumber and allowed to season. Over 200 trees in this area have been tagged for removal and pruning.

Heavy infestation of smaller European elm bark beetle in elm logs. A heavy infestation of Scolytus multistriatus Marsh was located in Conyngham Township, Luzerne County, Pa., among elm logs cut for mine props. In this wood lot a large amount of elm has been cut for this use, the more recently cut wood being too green for beetle attack at present. In all logs that had been cut for some time and dried out somewhat beetle attack had been very heavy and many pupae and larvae were found. All of the logs were slippery elm, and no American elms were observed either cut or growing in the vicinity. The owner of the logs could not be located, but men working in the lot stated that the mine props were shipped to mines in the vicinity of Hazleton, as ordered. Immediate permission was sought for destroying this infestation before there was any possibility of emergence. Although this infestation is within the regular Dutch elm disease work area and is only about 2 miles east of the Susquehanna River, it is well removed from any infected area, the nearest confirmed tree being approximately 10 miles north in Hunlock Township.

Largest diseased elm of year removed in Wilkes-Barre, Pa., area.--One of the confirmed elms eradicated in the Wilkes-Barre, Pa., area was the largest diseased elm found in the district this year, measuring 65 inches at breast height. The dying limbs of this large elm were infested with S. multistriatus in the larval stage, but there had been no emergence. Only 1941 discoloration was found, and this was located only in parts of the crown and leaders. For an elm of that size and located as it was in an open field, the beetle feeding had been surprisingly light. All feeding scars found were closed, but apparently some of them had been made in the spring of 1941 and the tree's vigorous growth this year had closed them.

Largest elm pruned.--The largest multiple elm that has been seen or reported in the State of Pennsylvania was recently pruned in Bucks County. The tree is 160 inches d.b.h. It is composed of 6 trunks: 2 small, each 9 inches d.b.h., and 4 very large trunks, the largest 55 inches d.b.h. The main crotch is located at ground level. A 10-inch branch was removed.

Scouting and sanitation completed on islands in Delaware River.--Owing to drought and the resulting low water level, crews in the Easton district of Pennsylvania have been able to wade to islands in the Delaware River. Taking advantage of this condition, the islands were scouted for both Dutch elm disease and beetle material, and the necessary sanitation work completed. Two confirmations have been obtained as a result of this work--one on Keiffers Island, in Lower Mount Bethel Township, Northampton County, about 7 miles above Easton, and the other about the same distance below Easton in Bridgeton Township, Bucks County. As these islands were in the outer disease zone they had not been previously scouted this season because preference was given the border-zone area. Very few beetle-infested elms were found on the islands this year, reflecting the close sanitation work they received in 1939, when several hundred elms were removed and as many pruned. Nearly all infested trees this season had either been uprooted by ice and flood or injured by storm.

Difficult elm eradications in New Jersey.--The most difficult eradication of the year was begun the latter part of the month in Mansfield Township, Burlington County, N. J. The tree is an infected elm 33 inches in d.b.h. Three loads of wood and brush have been removed from the top and the tree is only a little more than half topped. It will have to be topped down to about 25 feet to clear buildings, trees, and fences. Near the Masonic Home in Burlington County, a 45-inch and a 54-inch elm were eradicated, and in addition the butts of a 44-inch and a 33-inch elm were hauled to a burning site, as were several smaller trees and much pruned wood. Because the wood was so large, it was decided to start the fire at midnight. After burning for 16 hours, there were only about 4 pieces left, only 1 of them being of any size. The power-saw unit working in Sussex County removed 3 trees totaling 180 inches d.b.h. Two of these trees were difficult removals because they were multiple trees and leaned over wires and the highway. To fell them with ordinary hand crews would have required a great deal of topping The cable and winch on the tractor proved very useful, making it possible to pull over the entire trees without any topping. Considerable difficulty was encountered in eradicating a 37-inch tree in Mercer County, which was partially submerged and had to be pulled up an 8-foot bank by hand. A large infected tree cut by a power saw in Warren County had to be hauled from the woods to a burning pile. A diseased tree in Verona, Essex County, approximately 34-inches d.b.h. and 60 feet high, was situated on the edge of a flower garden, surrounded by a summer house, a swing, and rhododendrons. Neither the limbs nor the trunk could be dropped. It was necessary to lower each piece individually, and approximately 14 cuts had to be taken on the trunk, owing to limited space.

Cooperation by Albany, N. Y., Park Department.--Arrangements were made to burn all recently tagged material, which was being removed in the city of Albany, at a city dump where there was no fire hazard. Extra time was involved,as all of it had to be hauled to the burning site and all trees removed had to be topped. The city Park Department cooperated in the removal of this material by pulling large butts over and hauling large wood to the dump. Their crews worked behind Federal crews removing the stumps of the felled trees.

Public hearing on Dutch elm disease quarantine held in Connecticut.--The Connecticut Agricultural Experiment Station held a public hearing in New Haven on October 21 for the purpose of revising the State Dutch elm disease quarantine to coincide with the new Federal quarantine regulations. No one appeared at the hearing in opposition to such a revision; therefore it was recommended that the State quarantine regulations be revised.

Fire hazard continues.--The drought which prevailed last month was temporarily alleviated by 1 or 2 days of rain, but before the end of the month extreme dryness again existed in the woodlands and burning operations were greatly restricted.

Bough-lot inspection reveals high mortality of gypsy moth larvae.--At Weston, Mass., where a heavy infestation of gypsy moth occurred last summer, with heavy feeding and complete defoliation, it is now impossible to find enough egg masses for collecting. The same condition prevails at a heavy infestation in the Massachusetts State Reservation at Walden Pond Park in the towns of Lincoln and Concord. Absence of fresh egg clusters was also noted during the scouting of woodland in the border towns on or near the Massachusetts-Vermont State line, in connection with the inspection and certification of evergreen boughs. Here there was considerable kill of young gypsy moth larvae by the heavy frosts that occurred in this section during the last hatching season. Most of the infestations found in these bough lots showed a greater percentage of old egg clusters than new. Practically all of the old egg clusters found showed a very good hatch last spring. The unusual weather conditions of last spring are held responsible for keeping the infestation at last year's level, if not reducing it. The district inspector at Keene, N. H., reports that the inspector examining bough lots there has found old egg clusters which had hatched, but there were no new clusters in these same locations.

Taking no chances.--D. J. Frazier, district gypsy moth inspector at Bangor, Maine, reports that "with the trees bare of leaves, pulp-lot inspection has been improved; also the chances of being taken for a deer while performing this work during the hunting season have been lessened. While checking one lot, I encountered four different hunters on the same tract. They don't generally stay long, as I make it a rule to make plenty of noise while making an inspection of this nature." In commenting on further activities in his district, Inspector Frazier states: "The first snow of the season to cover the ground fell early on October 30 in the Harmony, Maine, area. Christmas-tree operators are at work harvesting the season's cut, and the outlook is that about as many trees will be cut as last season. I noted the first full carload of boughs being cut and loaded in the Greenfield area late in the month. Movement of this type of material in greater volume than in previous years is indicated."

Christmas-tree inspections under way.--Larger orders and scarcity of help resulted in an earlier start in the cutting of evergreen boughs and the collection of laurel for Christmas greenery. Most of the operators cannot get the help they need to fill orders on hand. These orders are also reported as running much larger than in 1940. A florist supply company in Springfield, Mass., reported receiving an order for 3,500 yards of laurel and spruce roping, one of the largest orders they have ever received. This must be ready to ship to Florida by the middle of November. Several truckloads of spruce boughs were examined and three laurel lots were surveyed for gypsy moth infestation in connection with the filling of this order. All material inspected was found free from infestation.

Increase in personnel in New England.--Fifteen temporary inspectors were employed on gypsy moth inspection work during October. Of these, 8 were in Connecticut, 1 in Rhode Island, and 1 in Maine, on nursery inspection work; 1 in Vermont on lumber inspection; and 4 in Vermont on evergreen-bough and Christmas-tree inspection. One inspector, paid by the State of Massachusetts, was employed in Boston for the inspection of products requiring certification for the European corn borer. Egg clusters removed from shipments inspected and certified numbered 250. The bulk of the infestation was removed from 8 carloads of lumber, from which infestations ranging from 10 to 40 egg clusters were removed. In addition, 864 egg masses were found on materials inspected prior to their manufacture for later shipment to points outside the gypsy moth area.

Winter storage of nursery stock gets early start Shortage of labor in the nursery center at Manchester, Conn , has resulted in the establishments starting their digging of nursery stock for winter storage a week in advance of the usual date. Laborers who are working for one nursery this season reside in Hartford. A truck from the nursery picks up the men in the morning and returns them at night. Inspectors are on hand to examine this stock to assure that it is barerooted before it is placed in storage houses. It is then eligible for joint Japanese beetle and gypsy moth certification as soon as the nursery is ready to ship the stock in the spring.

Christmas-tree inspection.--Reports from various district gypsy moth inspectors indicate that the 1941 Christmas-tree-shipping season promises to exceed that of all previous years, judging by the calls from numerous shippers. Some shippers had their men in the woods cutting trees and greens by the middle of October. The greatest problem appeared to be the lack of help, as most of the young men previously employed in this type of work are now engaged on National Defense projects or have been called for Army service. The size of this year's cut will largely depend on the amount of local labor available.

Inspected lumber accompanies shipments of explosives. A Massachusetts manufacturer of munitions is shipping to various ports of embarkation from 4 to 20 carloads of explosives daily. Each of these cars requires about 500 board feet of lumber. This is used to keep the containers from shifting during transit. This lumber moves under gypsy moth certification.

FOREST INSECT INVESTIGATIONS

Eastern spruce bark beetle infestation decreases.--T. J. Parr, of the New Haven, Conn., laboratory, reports that a survey of spruce areas on the White Mountain National Forest in New Hampshire and the Green Mountain National Forest in Vermont indicated a decrease in incidence of attack by Dendroctonus piceaperda Hopk. This was particularly true on two areas in New Hampshire where control was practiced during the winter of 1940-41. On these areas over 400 infested trees were removed or cut and burned on about 600 acres of virgin timber. Examination of all spruce trees on a permanent sample strip 3 chains wide and 180 chains long in the Middlebury district of the Green Mountain National Forest in Vermont showed an infestation of 0.111 tree per acre in October 1941, as compared to 0.203 tree per acre in 1940--a decrease of 0.092 infested tree per acre.

Wet summer in eastern Oregon reflected by tree growth. Abnormally heavy precipitation of the past growing season in eastern Oregon is reflected by outstandingly large tree-ring growth for 1941. This was observed by W. J. Buckhorn, Portland, Oreg., from an examination of a series of cross sections of ponderosa pine taken in connection with a study of *Ips oregoni* (Eich.) on the Ochoco National Forest. It is considered likely that this vigorous tree growth will cause increased host resistance and a consequent reduction of bark-beetle damage. Each month during the period from May through September practically all weather stations in eastern Oregon reported rainfall above normal. In August, for example, the average rainfall for this entire area was nearly five times the normal. Usually late spring and summer are the dry season of the year. The extent to which this year was out of line is illustrated by records taken at Ochoco ranger station. From May through September, 11.16 inches of precipitation was recorded, which is 65 percent of the average annual precipitation of 17.30 inches for this station.

Mountain pine beetle still epidemic in northern Utah. The fall survey of 1941 showed an appreciable decrease of infestation in most of the lodgepole pine stands on the Wasatch National Forest, but the infestation is still of epidemic proportions, according to R. L. Furniss, of the Portland, Oreg., laboratory. It is estimated that somewhat more than 40,000 infested trees are present on approximately 130,000 acres. Some 10 percent of the current pine beetle population is hold-over brood in trees that were attacked in 1940. The survey of the north side of the forest, where all units were fully treated during the 1940-41 season, showed a 90-percent reduction in the number of infested trees. Less success was achieved on treated units in the Provo-Duchesne area, apparently because of infiltration of beetles from untreated units. Plans have been made by the Forest Service to treat a large part of the remaining infestation, but funds are not available for complete coverage. Control operations were initiated on September 22 and will run until closed down by winter weather, often severe on the control area, much of which is approximately 10,000 feet in elevation. The project will be resumed next spring as soon as practical.

Late treating effective against Black Hills beetle in southern Utah. This year treating of ponderosa pine infested with the Black Hills beetle was seriously hampered on the Powell National Forest by a late spring. As a result, approximately 1,000 marked trees remained untreated at the end of June, when the woods had become too dry to continue felling and burning. An examination made on June 29 by R. L. Furniss showed that numerous new adults, some fully colored, were present in these trees. Sample strips of bark were removed from several trees and laid, inner side up, on the ground. Almost immediately ants of the genus *Formica* began carrying away the exposed bark beetle brood, and within a short time disposed of all except the fully hardened beetles. The abundance and effectiveness of these ants was such that it was decided to treat the remaining marked trees by the felling and peeling method. This was done and the project was extended until July 15. The fall survey of the area covered by this late treating revealed practically no reinfestation.

GYPSY MOTH AND BROWN-TAIL MOTH CONTROL

Forest conditions ideal for gypsy moth work.--Timely rains, which saturated the forest floor and eliminated the fire hazard, and the removal of much of the foliage from the trees by high winds provided ideal conditions for gypsy moth work during October. The rains were not of sufficient intensity to raise the water level and the scouting of swamps, which had been dried up by the prolonged dry period, proceeded rapidly. Scouting in general was speeded up, as the lack of foliage permitted a more rapid examination of the tree growth, and large quantities of accumulated brush and other wastewood could be burned on the days immediately following heavy rains. This was the first period since last March during which brush could be safely burned.

Defoliation by gypsy moth kills many trees in New Hampshire.--Early in October S. S. Crossman and C. E. Hood, of the Federal gypsy moth office, examined the tree growth in several areas north of Lake Winnipesaukee in and near Moultonboro, N. H., where severe gypsy moth defoliation occurred in the last year or more The latest defoliation in these areas took place during the summers of 1940 and 1941, when many of the oaks were from 50-to 100-percent defoliated. Many of these oaks are already dead and others are dying. A trail was followed for approximately 1 3/4 miles to the top of a hill having an elevation of over 2,000 feet. The oaks along much of this trail have suffered severely, with 25-to 50-percent mortality in some spots and pockets where the mortality is complete. These trees have been dying for several years. Many old and new gypsy moth egg clusters are now scattered from the base to the top of this hill.

Former employee donates specimens of New England wood.--A former gypsy moth employee donated to the Bureau samples of the wood, twigs, and buds of a large number of trees native to northern New England. These specimens will aid in instructing new gypsy moth employees, who are to be engaged in selective thinning work, in the identification of forest-tree growth. This collection is not complete, but forms a good nucleus for future expansion. The value of the collection for instructional purposes would be greatly increased by the addition of samples of foliage, nuts, cones, and sections of tree trunks, properly prepared.

Gypsy moth workers return from harvesting apples in Vermont.--All W. P. A. workers who had been taken from gypsy moth work to assist in harvesting the apple crop in Vermont were instructed to return to their former employment early in October, after the completion of the harvest. A few additional men were also obtained in Bristol Township, Addison County. Recent increases in W. P. A. scouting crews operating in northern Vermont were offset somewhat by the resignation of approximately one-third of the personnel, most of whom were referred by the Vermont State Employment Service to private employment on road construction, which must be completed before the advent of cold weather.

Exterminative measures eliminate four gypsy moth infestations.--The examination of the locality where a single-egg-cluster gypsy moth infestation was found last year in Eden Township, and three similar sites in

Lowell Township, Orleans County, Vt., failed to disclose any evidence of living infestations. Burlap bands placed around trees in the vicinity of the four colonies also gave negative results. This confirms the belief that the infestations were isolated results of the wind spread of small caterpillars. One of the infestations in Lowell was located on relatively open pasture land, whereas the other two were found some distance apart in dense woodland. A small crew of agents detailed to checking work in Salisbury Township, Addison County, discovered a gypsy moth infestation in woodland bordering a heavily traveled highway. Intensive scouting will be necessary to determine definitely the extent and size of this infestation before proceeding with exterminative measures.

Progress of gypsy moth work in Massachusetts.--A gypsy moth infestation covering approximately 30 acres was found in Richmond Township, Berkshire County, Mass., where a large percentage of the egg clusters were deposited on deadwood, rocks, and small underbrush. The most intensive form of scouting has been necessary throughout this area in order to find and creosote the hidden egg clusters. The ratio of old egg clusters has been rather large in this and at other nearby infestations, indicating that the larval mortality was high this year, owing to unseasonable weather late in May and early in June, when freezing temperatures were reported on several dates. Treatment work, including thinning, has proceeded satisfactorily at another infestation covering approximately 100 acres in Richmond Township, where the tree growth is particularly favorable for gypsy moth development. Several small crews of laborers scattered throughout Massachusetts barrier-zone towns found to be infested late in the fiscal year 1941 continued to cut down worthless apple trees and destroy egg clusters hidden in the cavities. The trees will be burned as soon as ground conditions are suitable.

Spruce-bough areas examined in advance of choppers.--Large quantities of spruce boughs are being cut in southern Vermont and throughout the greater part of Berkshire County, Mass., although the operators are having difficulty in obtaining choppers. Enough areas where the spruce boughs will be cut have been examined by gypsy moth scouting crews and found free from infestation to permit the choppers to proceed without interruption. The volume of boughs cut will increase as colder weather approaches, and it will be necessary to shift the scouting crews about rapidly to keep ahead of the operators. No cutting is permitted at locations where gypsy moth egg clusters are found and creosoted.

Brush-disposal machines active during October.--The two brush-disposal machines operated continuously during October--one in Berkshire County, Mass., and the other in Litchfield County, Conn. They reduced large quantities of brush and other wastewood to sawdust and broadcast it thinly over the forest floor by means of the built-in blowers. These machines are especially valuable during long periods of dry weather, when the brush cannot be burned, and also at locations where burning is inadvisable because of local conditions. The machines are portable and are towed from spot to spot by tractors. The caterpillar type tractor is best suited for work in the woods, as it is easily maneuvered and can be driven over soft ground, rough terrain, and steep pitches. The wheel-type tractor can be used in comparatively level areas, but cannot be operated satisfactorily over stumps and boulder-strewn surfaces.

Little progress in gypsy moth work in Connecticut --Because of the lack of available men, very little progress was made on gypsy moth work in Connecticut during October. Of the few men obtainable, practically all were inexperienced in gypsy moth work and required training before being assigned to regular field work, and many were unfit for the work because of age or physical handicaps. Because of the lack of man power, only a small percentage of the work planned for Connecticut is being accomplished. A crew undergoing instruction in scouting methods under close supervision found several small infestations in Southbury Township, New Haven County. The creosoting of egg clusters and the removal of dead and worthless trees is progressing slowly at these infestations.

Labor turnover high in Pennsylvania --The number of W. P. A. gypsy moth workers employed in Pennsylvania increased from about 470 to slightly less than 600 during October, but most of the men assigned to this work had had no previous experience and many soon resigned to enter private employment. The organization of crews has been delayed considerably by the lack of experienced men to act as crew foremen. The shifting of personnel is illustrated by the fact that requisitions have been placed for approximately 1,400 men since the beginning of the present fiscal year. Of this number about 770 reported and were assigned to work, and less than 600 are now on the gypsy moth pay roll. There is some prospect of increasing the number of N. Y. A. enrollees assigned to this project as additional men qualified to supervise crews become available.

Two gypsy moth infestations found in scouting river banks.--The scouting of tree growth and debris along the banks of the Susquehanna and Lackawanna Rivers was completed before the end of October. The work was done at a time when the streams were at their lowest levels for many years, and the men were able to walk from one bank to the other at several points without wetting their feet. An infestation consisting of eight gypsy moth egg clusters was found in Plains Township, and a single-egg-cluster infestation was located in Wilkes-Barre.

Progress of work at Pennsylvania gypsy moth infestations.--The gypsy moth extermination work in progress at an infestation in South Canaan, Wayne County, entailed the tearing down of numerous stone walls where egg clusters were found. The walls are rebuilt as fast as the egg clusters are creosoted. Scouting was started near the end of October in Salem and Paupack Townships, Wayne County, by crews transferred from their training grounds in Spring Brook Township. A little work was done by regular supervisory employees at assembling-cage sites where male gypsy moths were recovered last summer in Canaan and Cherry Ridge Townships. Although the results of these examinations have been negative to date, they are not entirely conclusive, as only the tree growth in the immediate vicinity of the cage sites has so far been examined.

PLANT DISEASE CONTROL

Berberis canadensis found in Pennsylvania.--While scouting an abandoned farm site at the foot of a mountain near Calvin, in Huntingdon County, Pa., the crew leader found some barberry bushes unlike any previously found in that State. Specimens were sent to L. M. Ames, at the Arnold Arboretum, for identification. They were identified as Berberis canadensis. This species of barberry is found over extensive areas in Virginia and West Virginia, and in isolated places in a few other States. A large patch of these bushes was found growing in very stony ground at the edge of a woods about 100 yards from an unoccupied log farmhouse. The bushes appear to have been there for many years and their habit of growth was identical with those found growing in Virginia and West Virginia. A careful check of past owners of the property was made to find out whether any of them had come from Southern States and might have carried the plants into the State. It was found that since the year 1700 only one former owner had not always been a resident of Huntingdon County and that one had come from the adjacent county of Bedford

Extensive area of escaped bushes found in Polk County, Wis.--In September a survey of Farmington Township, Polk County, was started where the largest spread of bushes existed in the area. A total of 434 bushes and 3,055 seedlings were destroyed on about 30 acres of timberland on 1 property. Of this number, 131 were fruiting bushes. The apparent source of these escaped bushes was a neglected hedge of 8 large fruiting bushes on an adjoining property. Rust damage in this area during the past season was considerable. The crews have continued the survey and have now destroyed 542 bushes on 11 properties but, owing to the heavy timber and thick underbrush, the work has been extremely difficult.

Growing of white pine resulting from natural seed germination.--In the fall of 1939, under pure stands of white pine planted early in 1900, there was a carpet of current-year white-pine seedlings coming up through the dead pine needles at Sinnissippi Farm, Oregon, Ill. The roots of these seedlings were scarcely in contact with the soil. Each root consisted almost solely of a thin single taproot, with hardly any feeder roots. The seedlings were growing in practically 100 percent shade under the parent pines and their length of life under such conditions was almost entirely limited to less than a year, or until the food material in the seed and the moisture in the needle duff had been exhausted. H N Putnam, in charge of blister rust control in the North Central States, suggested to the owner, who is greatly interested in his extensive white-pine plantations, that he try the experiment of lifting, by means of a silage fork or some such tool, a portion of the pine-seedling carpet and planting it in the open in contact with sandy soil. Last summer Mr. Putnam saw the results of this experiment. There are two coldframes in the owner's garden that contain a dense growth of white pine 2 years old and about 1 foot high, produced in the manner described above. Apparently, a very high percentage of the small seedlings so transferred and transplanted survived. This rather easy method of producing white-pine planting stock could be performed by farmers having white-pine shelterbelts and by others who have white pine plantations.

White pine areas needing control work in Grand Teton National Park.--A survey of white pine areas in Grand Teton National Park was carried out in August to obtain data on the amount of control work needed to protect selected stands from blister rust damage. The results of this survey have been submitted to the National Park Service for consideration in their control program. The control work requirements cover 10 small units of pine that appear to have a high aesthetic value to the park. Six of these are considered major areas, as each is cut by trails which provide the only means of travel in the park. The other 4 are important as desirable slope timber cover visible from the Jackson Hole Highway, but because of their relative inaccessibility may not be considered for control. The 6 major units consist of 3,450 acres requiring 3,800 man-days of Ribes eradication work for the initial coverage. The secondary areas total 2,350 acres requiring 2,700 man-days of work. The principal *Ribes* species are *Ribes montigenum*, *R. lacustre*, and *R. viscosissimum*, with some restricted areas containing *R. inerme*. Special control methods advised include the use of Diesel oil on intact *R. montigenum* and dry borax-salt mixture on the rock bound roots of *R. lacustre* and *R. viscosissimum*.

Beavers obstruct blister rust control work. L. E. Newman, State leader in New Hampshire, expresses his interest in the short item in the October 1, 1941, News Letter (v. VIII, No. 10, p. 11) on the effect upon gypsy moth scouting work of flooding an area by beavers. A similar experience was encountered in connection with blister rust control in New Hampshire last year and two areas were left unworked because of beaver activities. In one instance land totaling about 70 acres had been flooded; in the other the area amounted to about 10 acres. These beaver dams were destroyed by the local fish and game warden but a short time later it was noted that they had been rebuilt.

Blister rust infection found in North Carolina and Tennessee. R. G. Pierce, in charge of blister rust control work in the Southern Appalachian States, reports that blister rust on Ribes has been discovered for the first time in four counties in North Carolina, namely, Ashe, Avery, Watauga, and McDowell, and two counties in Tennessee, Carter and Johnson. In Avery County, N. C., infections were found on *R. rotundifolium* in three places and on *R. cynosbati* in four places, the elevations ranging from 3,250 to 5,000 feet. No infection could be found on white pines. Agent H. A. Whitman, Jr., is credited with finding the first infection in North Carolina on October 1. The first infection in Tennessee was found on October 10 in Johnson County by J. Curtis Ball and J. Wilburn Lane. In addition, the fall scouting work resulted in the finding of blister rust for the first time on *Ribes* in Mercer, Monroe, Raleigh, and Summers Counties, W. Va., and in Bland, Pulaski, Wythe, Grayson, and Smyth Counties, Va. In North Carolina all infections found to date are in nonpine areas or within the vicinity of scattered white pine classified as not worthy of protection. Bushes found, however, in the immediate vicinity of the Blue Ridge Parkway will be eradicated. In Tennessee the one infected area in Johnson County was very close to an eradication area, but practically all the white pine was recently burned and no further work will be done on this area. In Virginia the Grayson County infection was well within the control zone of a good white pine area, and in Smyth County the infected bushes were approximately 0.4 mile from the nearest white pine area.

Three-man crew in Vermont.--The three-man eradication crew as used during the present season by District Leader F. H. Rose was in part the result of a shortage of labor caused by National Defense employment, and in part an effort to find a more economical unit for the eradication of *Ribes* under certain conditions which existed in the southern part of Windham County. The *Ribes* found there are fewer than the average number for the district. The most important factor in the three-man unit is the foreman, who must be experienced in handling eradication crews, intelligent, and interested in obtaining a high degree of efficiency at the lowest possible cost. In using this unit the foreman works in the middle of the line and slightly in the rear of the crew men, and in this position is able both to check the crew men and cover his own strip as well. The men were spaced from 15 to 18 feet apart, a total width of 30 to 36 feet, but the spacing naturally varies with the density of the undergrowth. There is less loss of time in this unit during the grubbing of *Ribes*; also, crew alinement is more easily maintained and less time is lost at the beginning and the end of the strips. The work as shown in the following table was conducted under the regular program, the pine owners paying all the costs, with the exception of the foreman's lost time on account of rain, which was paid by the State. The crew men received 40 cents an hour and the foreman 55 cents. Five areas were worked, as shown below, and the combined areas represent typical conditions found in the southern part of Windham County, where the *Ribes* are below the average for the district. In the following table the work done by the three-man unit as described above, is summarized. Both initial and reeradication work are included.

Area	Area eradicated	Ribes per acre	Cost per acre	Total cost
	Acres	Number	Dollars	Dollars
I-------	32	5.7	0.356	11.40
II-------	228	3.3	.726	165.80
III-------	910	1.2	.234	213.70
IV-------	108	5.0	.744	80.40
V-------	90	3.7	.537	48.40
Total---	1,368	--	--	496.10
Average--	--	3.9	0.362	--

The results obtained with the three-man eradication crew indicate that it has a place in eradication procedure in Vermont; however, it is impossible to draw conclusions as to the relative efficiency of the six- and three-man crew units unless similar areas are covered by both units. The results obtained by the three-man crew indicate that it has a place in eradication procedure in Vermont; however, it is impossible to draw conclusions as to the relative efficiency of the six- and three-man crew units unless similar areas are covered by both units. The results obtained by the three man crew indicate that under certain conditions, where the Ribes are 10 per acre or less, it will prove to be a more economical unit than the six-man crew.

COTTON INSECT INVESTIGATIONS

Effect of moisture on hibernating pink bollworms. The results of the 1940 experiments by S. L. Calhoun on the effect that irrigations have on the development of hibernating pink bollworm larvae in the field at Presidio, Tex., were in line with his previous results. It has been found that, under tropical conditions, a reduction in the moisture content of the food tends to induce development of the diapause in the pink bollworm, and the theory has been advanced that continued irrigation until late in the season would be of practical value in reducing or eliminating the hibernating larvae in the Big Bend area of Texas. College Acala cotton, a slowly maturing western variety, was again used in tests designed to determine the effects of water stressed, normal, and excessive irrigations on the production of hibernating larvae. Irrigation was discontinued in the plots in series I on August 7, in series II on August 27, and in series III on October 10. Because of climatic conditions favorable to the conservation of moisture, the cotton in series I was not water stressed to the point of wilting, as was planned, although it was reduced somewhat in growth and fruiting. However, there were in the plots where irrigations were continued later in the season, decided increases in the percentage of bolls infested, the number of larvae per boll, the number of bolls per plant, and the total larval populations, as well as delay in the time of boll opening. At the time of the last examination, on October 24, 68 percent of the bolls were infested and 22,688 larvae per acre were found in series I; 74 percent infestation and 59,663 larvae in series II; and 92 percent infestation and 258,992 larvae in series III. By October 17, 76 percent of the crop was harvested in series I, 65 percent in series II, and 52 percent in series III. The total yields from the 3 series were 1,975, 2,156, and 1,901 pounds of seed cotton per acre, respectively. Although the yields in all plots were reduced by the late infestation of bollworms and pink bollworms, and by boll rot and frost, the losses from all of these factors were greater in the cotton irrigated later in the season. The numbers of hibernating larvae remaining in the soil and surface trash after the field clean up were 18,392, 29,040, and 50,336, respectively, in series I, II, and III. The results from 2 years' tests show that the later cotton is irrigated the greater the number of hibernating pink bollworm larvae produced, and there was no indication that an abundance of moisture will prevent the development of long-cycle larvae. Under conditions prevailing at Presidio the lowering of temperature as the season progresses seems to be the main factor, although not the only one, inducing diapause, and late-maturing cotton permits the build-up of a heavier carry over of pink bollworms.

Recovery of boll weevil parasite.--R. C. Gaines and A. L. Scales report that a specimen of Triaspis vestiticida Vier. was recovered from a field-collected infested square on October 9 at Tallulah, La. Determination was made by C. F. W. Muesebeck. This species is a parasite of the Peruvian square weevil which was forwarded from Peru by P. A. Berry and liberated in a heavily infested plot of cotton on September 12 and 16. No Triaspis parasites emerged from 464 squares collected from this plot on September 18 and only 1 specimen was taken from 216 squares collected on September 26. This is the first field recovery and probably the first record of this species from the boll weevil. Very little is known about the life history and habits of this parasite, and efforts are being made by T. R. Gardner to rear it on the bean weevil at the Hoboken, N. J., parasite laboratory.

Boll weevils abundant in cottonfields.--Reports from some sections indicate that fewer boll weevils were present in the cottonfields late this fall than in 1940, despite the fact that more damage was caused this season than at any time during the last 12 or 15 years, and that large numbers of weevils were caught on flight screens. Reports from Tallulah, La., and Florence, S. C., state that weevils were much more difficult to collect for the hibernation experiments than they were last year. Reports were received from Stoneville and other places in Mississippi that weevils were scarce in the fields during October; however, they were reported as abundant in fields where green cotton was present in the vicinity of Waco, Tex., as late as November 1. In southern Georgia and Florida weevils were probably more abundant in the fields than for several years. Several factors were responsible for this apparently anomalous situation. Cotton matured and opened early in South Carolina, Mississippi, and Louisiana, owing to the heavy weevil infestation, stripping by leaf worms, and high temperatures during September and October. These factors and the early fall destruction of cotton stalks reduced the weevil's food supply and curtailed breeding after the middle of September. The stalks in one of the fields where a flight screen is located at Tallulah were cut on October 16 and almost half of the total weevils caught on three screens during the entire month were taken on the next examination of this screen. The high temperatures and shortage of food during September and October undoubtedly stimulated weevil movement between fields in search of better feeding conditions and also probably caused a heavy mortality of weevils. On the other hand, weevils may have found protection in cool, damp places and survived. It is hoped that later examinations of woods trash and Spanish moss will yield more data on the numbers of weevils in hibernation this fall.

Species of leaf aphids on cotton.- There has been considerable confusion in making determinations in the field of the leaf aphids found on cotton because of the variations in Aphis gossypii. The first aphids appearing on cotton in the spring are large, dark-colored, winged forms. The first generation that develops on cotton consists mostly of large wingless forms, ranging in color from pale to dark yellow, or from pale-to-bluish green to almost black. Around the first week in July the large forms and the green forms disappear and are replaced by very small yellow forms. Development of the small yellow forms continues through generation after generation until the first cool nights of fall, when the large yellow and greenish forms again appear. A large series of aphids consisting of these various forms, collected by E. W. Dunnam and S. L. Calhoun on cotton in the vicinity of Stoneville, Miss., were determined by P. W. Mason as A. gossypii Glov. However, there were also some specimens of the potato aphid (Macrosiphum solanifolii (Ashm.)) among the large light and dark colored aphids, and of the green peach aphid (Myzus persicae (Sulz.)) among the large light-colored aphids.

Flight of cotton leaf worm adults in Greenfield, Mass.- During the evening of October 7 a flight of adults of Alabama argillacea (Hbn.) was observed in Greenfield, when thousands of the insects swarmed around street lights and lighted store windows. So far as is known, this was the heaviest flight of the cotton worm seen in this locality for several years.

PINK BOLLWORM AND THURBERIA WEEVIL CONTROL

Gin-trash inspection.--In southern Texas inspection of gin trash to determine the status of the pink bollworm was continued in Cameron and Nueces Counties during the first week in October. Results for the season in Nueces County were negative. Three additional pink bollworms were found in Cameron County, where infestation has consistently been heaviest since the insect was found in that area, bringing the total specimens for the season to 28 through the examination of 1,614 bushels of trash. Last season 5,180 specimens were taken from 1,216 bushels of trash. In Hidalgo County only 3 pink bollworms were found during the season's inspection of 2,284 bushels of trash, as compared with 829 larvae from 3,043 bushels in 1940. Inspection in Tom Green and Concho Counties, in the Panhandle regulated area, was brought to a close in November, with negative results. A light infestation was found in these 2 counties in 1939, and 1 specimen of the pink bollworm was found in Tom Green County in 1940, but results in Concho County were negative for that year. A considerable quantity of trash was examined from other counties in the southern part of the Panhandle regulated area and adjacent counties outside; also, from nonregulated areas in the central and eastern parts of the State, with negative results. Inspection was brought to a close in the El Paso Valley at the end of October, samples having been run from Hudspeth and El Paso Counties, Tex., and from Dona Ana County, N. Mex. This inspection yielded 143 pink bollworms from Dona Ana County, 1,598 from Hudspeth, and 4,243 from El Paso. Inspection was also completed in the Pecos Valley of Texas at the end of the month, with only 3 pink bollworms taken this year, as compared with 88 from approximately the same quantity of trash in 1940. In Maricopa County, in the Salt River Valley of Arizona, additional pink bollworms were found in the vicinity of Glendale, bringing the total found in that rather small spot to 437. Last season only 138 pink bollworms were taken from a larger quantity of trash. Inspection carried on during the month in other parts of the Salt River Valley gave negative results. The annual inspection in the Safford Valley of Arizona resulted in 23 pink bollworms being taken from 708 bushels of trash, 8 of these coming from Greenlee County and 15 from Graham. Last year 24 pink bollworms were taken from 520 bushels of trash. Inspection in the Juarez Valley of Mexico, adjacent to the El Paso Valley, showed a considerable number of worms from Vado de Cedillos and El Cuervo. Inspection of trash from 1 bale of cotton ginned at Vado de Cedillos yielded 1,044 pink bollworms. Last season a bale grown on the same land and ginned on the same date yielded 10,000 larvae. Inspection was begun in the Fuerte River Valley of Sinaloa, Mexico, about October 15, with samples of trash from cotton grown locally and at Verdura and Culiacan, Sinaloa, and from Navajoa, Cajeme, and Santa Ana, Sonora. At the end of the month no pink bollworms had been found. The season's inspection in Alabama and Georgia, and in the Delta sections of Mississippi, Tennessee, and Arkansas was brought to a close in October, with negative results in all States.

Stalk destruction.--The principal measure for the control of the pink bollworm in south Texas is the destruction of all living cotton plants following the harvesting of the cotton crop. October 1 was the date fixed by the State for completion of this work in the lower Rio Grande Valley counties of Cameron, Hidalgo, Starr, and Willacy, and October 15 for the remaining southern Texas counties. Adverse weather and a serious shortage of labor made it necessary to grant individual extensions to several hundred farmers in the lower Rio Grande Valley counties in order that they might complete the harvesting of their crops, and a general extension until October 31 was granted by proclamation for all other southern Texas counties. Rainfall was more or less continuous over much of the area during October, which prevented completion of stalk destruction. Good progress was made, however, despite these adverse conditions, many farmers going into fields that were not dry enough to work effectively in an effort to get the stalks out. Of the 233,100 acres of cotton planted in 1941 in the lower Rio Grande Valley counties, only 8,890 acres of stalks remained standing at the close of October, and stalks on approximately 66,350 of the 206,700 acres of 1941 cotton in other southern Texas counties were yet standing. In the cotton-growing areas of adjacent Mexico, flood waters from the Rio Grande hampered the stalk-destruction work in the Matamoros area, reaching as far west as the town of Rio Rico, which was completely inundated. Approximately 35,000 acres of lowlands were flooded. Also, rainfall interfered considerably with field clean-up in higher areas; nevertheless some progress was made, especially in sections where adverse conditions did not prevail.

Wild-cotton eradication.--As in past seasons, this Division, in cooperation with the Florida State Plant Board, was successful in making arrangements with Works Progress Administration officials for the assignment of a number of W. P. A. workers to assist in wild-cotton eradication. This work is discontinued during the summer months on account of unfavorable working conditions. The first workers for the current season were assigned on October 9 and at the close of the month 65 men had been assigned to this project. During the month 1,226 acres was covered and 45,886 seedling plants were destroyed, but only 8 mature plants were found Limited numbers of squares, blooms, and bolls were taken from wild cotton plants and inspected, but no pink bollworms were found.

TRUCK CROP AND GARDEN INSECT INVESTIGATIONS

Methyl bromide effective against narcissus bulb fly.--Methyl bromide appears to be one of the most effective treatments of narcissus bulbs for the control of Merodon equestris (F.), as reported by F. S. Blanton, of the Babylon, N. Y., laboratory. In tests conducted during the storage season of 1940, it was found that 2½ and 3 pounds of methyl bromide per 1,000 cubic feet, at a duration of 4 hours, gave a complete kill of the larvae infesting narcissus bulbs. Uninfested bulbs of the variety King Alfred were treated on 3 different occasions and these, with the untreated checks, were divided into 15 samples of 20 bulbs each and planted in a completely randomized plot. There was no significant difference in either the quality or quantity of flowers produced in these plots. A total of 83.7 percent of the untreated bulbs flowered, as did 90.7 percent of those treated with a 2½-pound dosage and 89.3 percent of those treated with a 3-pound dosage. There was no difference in the yields of the resultant bulbs, expressed in terms of weight. The total increase in weight of bulbs for the untreated check was 96.6 percent, for the 2½-pound dosage it was 92.9 percent, and for the 3-pound dosage 93.3 percent. Judging from the results obtained in these studies, apparently this fumigant will be very satisfactory for use in combating this pest. The cost of the material will be negligible and, with proper fumigation equipment, it will constitute a rapid method of treating bulbs.

Newly developed organic compounds prove effective against hornworms on tobacco.--C. F. Stahl and his associates at the Oxford, N. C., laboratory, report that in the course of tests the newly developed organic insecticides 2-fluorylamine and diazoamino benzene proved to be more toxic to the larvae of Protoparce sexta (Johan.) than did other insecticides of this group, including phthalonitrile, 1,4 diphenyl semicarbazide, or p-aminobenzene hydrochloride, all of which showed some degree of toxicity. The detailed results are shown in the following tabulation, a difference of 14 percent being of mathematical significance.

Treatment or material tested	Percentage of mortality
2-fluorylamine	70
Diazoamino benzene	58
Phthalonitrile	43
1,4 diphenyl semicarbazide	41
p-aminobenzene hydrochloride	41
Check (no insecticide)	2

Cryolite samples having pH values of 3.7 and 8.1 were tested about the same time but not simultaneously with the organic materials. The resulting percentages of mortality were 92 and 89 for the two samples, respectively, indicating that none of the organic materials included in these tests were as effective as cryolite. These organic materials were diluted with equal parts, by weight, of a commercially prepared, finely ground diatomaceous earth and were dusted onto potted sucker plants of tobacco within a settling dust chamber. Cryolite was diluted, with the same material as the organic insecticides, to contain 50 percent of sodium

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aluminum fluoride. In conducting these tests a dosage of 150 milligrams of dust mixture was blown into a special type of settling dust chamber and allowed to settle for 2 minutes. After the application of the dust mixture, 10 second-instar larvae were placed on each sucker plant and observed for a period of 4 days. Three sucker plants and 30 larvae were used for each of 8 time replicates, making a total of 240 larvae per treatment. All of the organic materials used in these tests, with the exception of phthalonitrile, were very repellent to hornworm larvae, as evidenced by their lack of feeding and their tendency to leave the treated foliage. The 2-fluorylamine was probably the most repellent material tested.

Newly described mite damages tomatoes.--E. W. Davis, of the Modesto, Calif., laboratory, reports that a mite, Phyllocoptes destructor Keifer, described in 1940 by H. H. Keifer, of the California State Department of Agriculture, as a new species and known locally as the "silver mite" or "tomato russet mite," has spread over the tomato-producing districts of the San Joaquin Valley and caused severe damage. In some fields the losses are estimated at 50 percent of the crop. The presence of this mite on tomatoes often passes unnoticed because of the superficial resemblance of early mite injury to that caused by nematodes. The injury by this mite first begins to appear in June but does not become serious enough to be noted until late in July or in August. Starting on the stem near the ground the mite infestation works up the plant causing the leaves to dry up; thus, during hot weather defoliation of the plant is very rapid and the fruit is exposed to sunburn. Preliminary tests in the greenhouse by Mr. Davis revealed a pronounced difference in various varieties of tomatoes in their degree of susceptibility to mite damage. Plants of Bonny Best, Pritchard, and Essar seem to be less susceptible to the mite than any of the other varieties, while Ponderosa and Santa Clara represent the most susceptible varieties. In general, pear-shaped tomatoes appear to be much more resistant to the mite than any of the stone or other round varieties. R. E. Campbell, of the Alhambra, Calif., laboratory, also reports destructive numbers of this mite on tomatoes.

Effectiveness of derris-pyrethrum-sulfonated castor oil or derris-white oil emulsion sprays against red spider.--In a series of tests conducted recently by C. A. Weigel, G. V. Johnson, and J. D. DeCoursey, of the Beltsville, Md., laboratory, the effectiveness of the standard spray containing derris (0.0056 percent rotenone), pyrethrum (0.01 percent pyrethrins), and sulfonated castor oil (diluted 1 to 300 parts by volume), which has given consistently good control of red spider (Tetranychus bimaculatus Harv.) on greenhouse-grown cucumber, tomato, and other crops, was compared with one containing derris (0.0056 percent rotenone) and a white oil emulsion (0.5 percent), and another spray containing only white oil emulsion (1.0 percent). The sprays were applied on a weekly and biweekly schedule on cucumber and tomato plants grown under conditions simulating commercial practice. On cucumbers the results, based upon 3 separate mortality counts taken shortly after each weekly spray application and on 1 population count of living red spiders remaining on the plants after 6 weekly and 3 biweekly applications, indicated that a weekly application of either of the first 2 sprays gave a very high kill of red spiders and was equally efficient. Biweekly applications of the derris-oil emulsion, however, proved less effective. The spray containing oil emulsion alone, applied either on a weekly or biweekly basis, gave unsatisfactory control. Tolerance studies based on 12 weekly and [illegible] biweekly applications showed that the foliage of derris-oil emulsion-treated cucumber plants had a more uniform color than those receiving other treatments, and that the leaves showed less pitting from the spray. The plants receiving weekly applications of a derris-oil spray appeared to produce more Grade No. 1 cucumbers and more poundage than those receiving any other treatment. The untreated plants yielded the lowest number and weight of cucumbers. With respect to the tests on tomato, essentially the same as those on cucumber except that applications were made with hand sprayers, the final mortality counts indicated that all of the treatments (except the oil emulsion spray alone, which when applied biweekly produced only 71.3 percent kill) were equal in effectiveness and gave a kill of red spiders ranging from 95.5 to 99.5 percent. The checks showed a natural mortality of 38 percent. The final population counts of living spiders showed no difference between treatments, the spray applications having markedly reduced the population on all plants. All treatments caused staining and pitting of the fruit. On the basis of earlier observations, the staining on fruits can be readily washed off by syringing with water within 48 hours after application. The fruit and foliage of the plants receiving the oil emulsion spray alone had extensive red spider feeding injury due to lack of control. The fruit on the untreated plants was not oil-stained, but both the fruit and foliage showed considerable feeding injury.

INSECTS AFFECTING MAN AND ANIMALS

Cooperative salt-marsh survey in extra-cantonment areas in the Southeast.--G. H. Bradley, of the New Smyrna Beach, Fla., laboratory, has been selected to supervise a group of specialists employed by the United States Public Health Service to make salt-marsh surveys in extra-cantonment areas in the Southeastern States. Mr. Bradley's assistants will include S. E. Shields, of the St. Lucie, Fla., sand fly laboratory, Travis E. McNeel, of the Division of Domestic Plant Quarantines, located at Gulfport, Miss., and Henry S. Chubb, of the New Smyrna Beach Laboratory, all of whom are being transferred temporarily to the Public Health Service. It is expected that three additional technicians will be appointed at an early date.

Resistance of mosquito larvae to pyrethrum larvicides.--According to tests recently made by R. C. Bushland and W. V. King, of the Orlando, Fla., laboratory, larvae of Aedes taeniorhynchus (Wied.) are much more resistant to pyrethrum larvicides than are those of Culex pilosus (Dyar and Knab).

Dog fly control terminated in northwestern Florida.--W. E. Dove, of the Panama City, Fla., laboratory, reports that actual spraying for dog fly control ceased on October 20. A total of 208,350 gallons of material was used on 286 miles of grass deposits along a meandering shore line of 701 miles. About 40 percent of the shore line, Mr. Dove reports, contained deposits of grass sufficiently heavy for spraying, and averaging about 35 inches in width and 7.7 inches in depth. The average rate of application was 728 gallons of material per mile of grass treated.

FOREIGN PLANT QUARANTINES

Entomological interceptions of interest.--A living adult of the tingitid *Acalypta mera* Drake was intercepted at Seattle on July 29 on *Sempervivum* sp. leaf in baggage from Canada. Four living adults of the bruchid *Acanthoscelides ceratioborus* (Philippi) were intercepted at Chicago on July 31 in the seeds of *Prosopis chilensis* in mail from Peru. Living adults, larvae, and pupae of the bruchid *A. flexicaulis* (Schaef.) were taken at Brownsville on September 14 in ebony beans in baggage from Mexico. Twenty-one living larvae and 3 living pupae of the euribiid *Anastrepha fraterculus* (Wied.) were taken at Boston on September 22 from 7 grapefruits in stores from Argentina. One living larva of *A. mombinpraeoptans* Sein was found at Mobile on July 25 in mango in quarters from Puerto Rico. A living adult of the bruchid *Caryedon fuscus* (F.) was found at San Francisco on September 17 on paper wrapping of bean pods in baggage from Hawaii. Living and dead larvae of the Mediterranean fruitfly (*Ceratitis capitata* (Wied.)) were intercepted at San Francisco on September 17 in *Coffea arabica* in baggage and on August 30 in avocado in baggage from Hawaii. Living larvae of the curculionid *Ceutorhynchus quadridens* Panz. were found at Baltimore on August 5 in the stems of cabbage leaves in stores from England. Specimens of the coccid *Chionaspis diosmae* Brain were taken at New York on March 23, 1940, on *Barosma betulina* and *B. crenulata* in cargo from the Union of South Africa. A living adult of the lygaeid *Clerada apicicornis* Sign. was taken at Hoboken on August 16 with *Cattleya* sp. in cargo from Colombia. Living larvae of the curculionid *Heilipus trifasciatus* F. were found at Galveston on August 13 in an avocado seed in stores from Costa Rica. A living larva of the phycitid *Hypsipyla grandella* (Zell.) was found at New York on August 8 in mahogany log in cargo from Guatemala. Living larvae and adults of the scolytid *Leperisinus fraxini* Panz. were intercepted at New York on July 30 and August 6 and at Philadelphia on August 4 in ash wood crating from England. Living larvae of the curculionid *Palaeopus costicollis* (Marsh.) were taken at Mobile on September 30 in sweetpotato in stores from Trinidad and at New York on September 20 in yam in baggage from Honduras. A living adult of the lygaeid *Peritrechus fraternus* Uhl. was intercepted at Calexico on July 15 on *Brassica alba* in baggage from Mexico. Living adults of the bruchid *Phelomerus aberrans* Sharp were intercepted at Hoboken on March 28 in *Cassia moschata* seed in mail from the Canal Zone. Four living adults of the bruchid *Speculibruchus erythrinae* Bridwell were taken at New York on July 14 in seeds of *Erythrina caffra* in mail from the Union of South Africa. Specimens of the coffee berry borer (*Stephanoderes hampei* Ferr.) were intercepted at St. Paul, Minn., on September 18 in coffee beans in mail from Canada. Three living larvae of the olethreutid *Talponia batesi* Hein. were intercepted at Laredo on September 24 in cherimoya in baggage from Mexico.

Pathological interceptions of interest.--A sample of nematode-infested narcissus bulbs from Ontario, Canada, collected at Hoboken on October 2, was examined by G. Steiner, who reports finding *Acrobeloides* sp. new (?), *Acrobeloides* sp. new, and *Aphelenchoides* sp. new. A Mexican pine cone taken from baggage at El Paso on August 29 was referred by the Bureau of Plant Industry to H. S. Jackson, who reports: "Immature, but certainly *Aleurodiscus*, related to *A. roseus* group and a very pretty thing." It is hoped he will determine the species as he goes on with a monograph he is preparing. *Ascochyta imperfecta* Pk. was found on alfalfa leaves and stems from New Zealand which were being used for animal food on the deck of a ship inspected on October 27 at New York. *Coleosporium dahliae* Arth. was intercepted on dahlias from Mexico on September 18 at Hidalgo and on October 1 at Brownsville. Apparently this rust does not occur in the United States. *Colletotrichum orchidearum* Allesch. was intercepted on July 29 on *Cypripedium philippinense* from Thailand at San Francisco, on August 16 on *Epidendrum vitalenium* from Mexico at Laredo, on June 5 on *Masdevallia* sp. from Costa Rica at Seattle, and on August 1 on *Vanda coerulea* from Burma at San Francisco. A cotton stalk from Mexico in a car trunk inspected at Brownsville on October 18 was infected with what appeared to be *Diplodia gossypina* Cke. *D. henriquensiana* Trav. & Spessa was intercepted at Hoboken on September 23 on a *Cattleya* pseudobulb in mail from the Canal Zone. *D. paraphysaria* Sacc. was intercepted on July 14 at San Francisco on *Vanda coerulea* from Thailand and on August 11 at San Juan on orchids from Venezuela. *Gloeosporium aleuriticum* Sacc. was intercepted on September 10 at San Francisco on *Aleurites moluccana* nut husk from Hawaii. *G. cattleyae* Sacc. & D. Sacc. was intercepted on August 4 at San Francisco on *Cattleya mendelii*. *Lophodermium juniperinum* (Fr.) de Not. was found on October 17 at New York on one juniper berry in a large shipment from Hungary. *Mycosphaerella* sp. (no species reported on host) was intercepted on August 18 at Hoboken on a *Sobralia* leaf from Guatemala. *Phyllosticta stanhopea* Allesch. was intercepted on September 24 at Hoboken on *Stanhopea* sp. from Peru. *Physalospora cattleyae* Maubl. & Lasn. was intercepted on September 10 at San Francisco on *Cattleya* seedlings from England, and on July 15 at Brownsville on *Batemania* sp. from Colombia. *Sclerotinia bulborum* (Wakk.) Rehm was found on October 7 at New York on one bulb in a crate of hyacinth bulbs from England. *Sclerotinia rolfsii* Sacc. was found on July 26 at Hoboken on a wild *Cattleya* from Brazil. *Sporonema camelliae* Earle was intercepted on April 24 at Hoboken on camellias from England. *Vermicularia geayana* Del. was intercepted on July 14 at San Francisco on *Cattleya dowiana* from Costa Rica. *Verticilliodochium tubercularioides* (Speg.) Bubak was found on August 11 at Seattle on an orchid pseudobulb from Costa Rica.

DOMESTIC PLANT QUARANTINES

Peach nurseries certified for shipping.--A summing up of the Federal-State inspection work in the environs of the nurseries throughout the States infected with the phony peach or the peach mosaic disease shows that of the 394 peach nurseries inspected in the phony-infected area, 4 nurseries failed to meet certification requirements of the State quarantines. Of the 161 nurseries inspected in the mosaic area, only 9 growing less than 1,100 trees are ineligible for certification. These figures do not include, however, inspected nurseries in the infected area of California, as that State prohibits the shipping of host nursery stock from the infected area. In the various infected States, all diseased trees within a radius of 1 mile of the certified nurseries or of the certified sources of budwood were removed, as provided by the quarantines. The results of inspections in the fall, prior to defoliation, necessitated no change in the status of nurseries in the mosaic area as determined by the inspections earlier in the season. The completion of inspection for the phony peach disease in Georgia, on October 15, terminated the season's inspection activities throughout the infected States. The work is now confined to the removal of trees found diseased during the inspection season and of abandoned and escaped peach trees. The States' activity on the projects was represented by the services during October of 5 field supervisory employees and 1 office worker.

Peach mosaic survey in Mexico.--Owing to the fact that peach mosaic has been known to occur for the last 6 years in the El Paso Valley district, a comparatively narrow strip of tillable land along the American side of the Rio Grande, it was thought advisable to make a survey of similar area across the river in Mexico. Through the cooperation of the Mexican Department of Agriculture, the growers, and others, a survey was made from August 1-18 of the Juarez Valley, of the vicinities of the cities of Chihuahua and Camargo, and of 7 small villages in the State of Chihuahua. Peach mosaic was found to occur in all of the areas visited. In the Juarez Valley, mosaic trees were found on nearly three-fourths of the properties inspected. It is believed that the disease may have been present there for several years. The trees in these various localities were largely of the home-orchard type. Both seedlings and budded trees were found at many of the points visited. The sampling method was used. A total of 117 properties was inspected, and of these the mosaic disease was found on 85. The survey was conducted by R. L. McClain, assistant pathologist, and Armando Cedillos, junior quarantine aide, both of this Bureau, with the assistance of Ing. Manuel Alcazar, delegado fitosanitaria, of the Mexican Department of Agriculture.

White-fringed beetle control work.--A 6-week period of inspection at various points in western Florida by two State inspectors, brought to a close on October 6, resulted in no new infestations of the white-fringed beetle being found. Regulatory activities throughout the infested areas of the various States were increased considerably in October with the harvesting of farm products, the fall movement of nursery stock, and the inspection of equipment of several circuses operating in the infested area. A few beetles continued to be taken in the emergence cages in the New Orleans area until about the middle of October. Larval diggings during the latter part of October failed to reveal the presence of pupae or unemerged adults. In the Gulfport, Miss., area a few scattering adults were taken in the emergence cages, one as late as October 23. Soil diggings near the close of the month continued to show a small number of pupae. No emergence was reported from other areas and live adults were very scarce; however, in the newly infested area at Bolton, Miss., live adult beetles could still be found near the end of the month.

Mole cricket control goes forward.--During October, over 835,000 pounds of bait was mixed and distributed to growers in 11 counties in

Florida for the control of mole crickets, making a total of nearly 1,500,000 pounds furnished to growers since the beginning of this season's program on September 9 This bait has been furnished principally for the protection of young plants in seedbeds or those newly transplanted to the fields when mole cricket activitiy is most damaging. This work is conducted in cooperation with the State, the Florida State Plant Board under the direction of the State Mole Cricket Control Committee making distribution of the bait to growers. Counties furnish transportation for the bait from the mixing stations. The station located at Wauchula was discontinued during the month, after which all bait was supplied from Plant City. The State is also furnishing technical assistance on research work to learn more of the characteristics of the several species of crickets and to determine improved methods of combating them.

Chinch bug survey.--At the request of the State leaders of Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, and Oklahoma for assistance in making a survey to determine the numbers of chinch bugs in hibernation, arrangements have been completed for the assignment of scouts to conduct this work. The figures obtained by such surveys are used as an index of probable chinch bug abundance the following spring. The above-named States are those in which chinch bug populations reached damaging proportions during the last 2 years and to which the Bureau furnished creosote for their control.

Work on citrus canker stepped up.--Inspection for citrus canker went forward in 7 Texas counties in October, including the Navasota area where particular emphasis was placed on the reinspection and removal of old citrus hedges and the reworking of the 6 properties where citrus canker was found earlier in the year. Fifteen Federal field men worked on the project in October, in addition to 103 W. P. A. laborers. No citrus canker was found during the month

Truck lines surveyed for quarantine enforcement.--The magnitude of transportation problems in relation to transit inspection is illustrated by the results of a recent survey of interstate trucking at Chicago, which showed that 119 long-distance carriers operate from Chicago to 21,000 other cities and towns, and that there are also 413 long-distance carriers which are not members of the Chicago Association of Commerce. At Omaha a survey of commercial truck lines has been completed and arrangements have been made for inspection of quarantined materials moving by this means of transportation.

Transit inspection in October.--Transit inspection was resumed in October at Birmingham and Detroit. A collaborator assigned by the Michigan Department of Agriculture is conducting the work at the latter city. The State of Georgia has assigned an inspector to assist part time at Atlanta. The Northeastern States region reports a decline in nursery-stock shipments, because of exceedingly dry weather. The Central States region reports a like decline, because of excessive rain.

Misuse of certificates detected.--The flagrant misuse of Japanese beetle certificates was recently discovered on three shipments found by a New York transit inspector. By careful checking of the shipments it was found that two were used for unauthorized materials and a third had apparently been borrowed from another shipper and altered. There was also intercepted at New York and returned another shipment of plants in violation of the Japanese beetle quarantine bearing a rubber stamp with a notation to the effect that it was "OK on Quarantine No. 48." These violations were reported to the project leader on Japanese beetle control.

CONTROL INVESTIGATIONS

Stabilization of a naphthalene aerosol.--W. N. Sullivan and J. H. Fales, in cooperation with L. D. Goodhue, of the Division of Insecticide Investigations, have completed a study on the stabilization of a naphthalene aerosol with the use of smoke. The results of this work are published in the Journal of Economic Entomology (v. 34, No. 5: 650-653, October 1941).

INSECTICIDE INVESTIGATIONS

Apparatus for measuring coarseness of powders.--On November 4 the United States Patent Office granted E. L. Gooden, of this Division, Patent No. 2,261,802. This is assigned to the Secretary of Agriculture and to his successors in office. This patent fully describes an air-permeation apparatus for determining the average fineness of powdered insecticides and other powdered materials. The permeability of a bed of powder to a fluid is known to be a function of (1) the porosity of the bed, as expressed, for example, in percentage of voids; and (2) the specific surface of the powder from which the bed is formed. To determine the surface mean diameter, or average particle diameter, of a powder, it is possible to measure separately, by suitable means, the porosity and the permeability of the sample, and from the relationships mentioned above and through the use of technically known constants, to calculate the average particle diameter of the powder.

New synthetics patented as insecticides.--On November 4, 1941, the United States Patent Office granted S. I. Gertler and H. L. J. Haller, of this Division, Patent No. 2,261,735, which is assigned to the Secretary of Agriculture and to his successors in office. This patent covers the use as insecticides of certain semicarbazones, especially those of crotonaldehyde, 2-furaldehyde, and salicylaldehyde. Crotonaldehyde semicarbazone tested against newly hatched screwworm larvae by the "jar test" method was toxic at a concentration of 0.05 percent; 2-furaldehyde semicarbazone tested against newly hatched screwworm larvae by the above method also was toxic at a concentration of 0.05 percent. This compound when used as a dust was also more toxic than derris, after a 48-hour period, to the melon worm, the imported cabbage worm, and to Hawaiian beet webworm larvae. Salicylaldehyde semicarbazone dusted on Swiss chard leaves when fed to the Hawaiian beet webworm of the fifth instar showed a higher mortality after 48 hours than did derris.

Determining alkaloid content of uncured tobacco.--The United States Patent Office on October 28 granted L. N. Markwood, of this Division, Patent No. 2,260,677. This is assigned to the Secretary of Agriculture and to his successors in office. The process described in this patent comprises digesting the tobacco with sulfuric acid, recovering the resulting extracts, reacting lead oxide with said extract in an amount sufficient to precipitate the proteins from the extract and to neutralize the mother liquor, and separating and recovering the mother liquor from the precipitate.

Soft glass affects melting point of rotenone.--H. A. Jones has shown that when the melting point of pure rotenone is determined in soft-glass tubing the melting point is depressed several degrees. This finding is of practical value because some chemists determine the melting point of rotenone as a measure of its purity. It is important that the melting point of rotenone be determined in a hard-glass capillary tubing, such as pyrex glass. An account of this work is published in Industrial and Engineering Chemistry (Analyt. ed., v. 13, No. 11, p. 819, Nov. 15, 1941).

Use of fatty acids in insecticidal aerosols.--W. N. Sullivan and J. H. Fales, of the Division of Control Investigations, and L. D. Goodhue, of this Division, published (Science, n. s., v. 94, No. 2445, pp. 444-445, Nov. 7, 1941) an account of tests against houseflies with orthodichlorobenzene alone and mixed with oleic and lauric acid when dispersed in aerosol form. In tests against the roach and the bedbug, a 100-percent mortality was obtained by using 1½ pounds of orthodichlorobenzene containing 5 percent of lauric acid per 1,000 cubic feet. The apparatus used in this work consisted of a small nasal-type atomizer mounted 4 inches above the center of an electric hot plate held at 375° C. A small electric compressor was used to maintain the air pressure that operated the atomizer. The lauric or oleic acid alone killed only 1 percent of the houseflies after 2 days, and orthodichlorobenzene alone killed only 2 percent in the same time, whereas the mixture of acid and orthodichlorobenzene killed from 55 to 60 percent.

Average particle diameters of commercial insecticidal sulfurs.--E. L. Gooden, of the Division of Insecticide Investigations, published (Indus. and Engin Chem, v. 33, No. 11, pp. 1452-1453, Nov. 1941) the reresults of a survey of commercial insecticidal powdered sulfurs with regard to average diameters (surface mean diameters). In the 54 samples tested the average diameters ranged from 5 to 25 microns. These determinations were made by means of the self-calculating air-permeation apparatus described in United States Patent No. 2,261,802.

BEE CULTURE

New variety of Italian bee.--W. J. Nolan, Beltsville, Md., reports progress in isolating, through selective breeding, a pure strain of the Italian bee with color markings distinct from those of strains of this race now in use in this country. The new strain is further characterized by the fact that the chitinous color patterns of queen, drone, and worker bear a closer resemblance to each other than do patterns in other Italian strains. On the thorax the black in the chitin of common strains is replaced by cordovan, on the abdomen by cinnamon, and on head and legs by yellow or deep tan. The scutellum is yellow. Abdomens of workers appear banded cinnamon and yellow instead of black and yellow since all typical Italian yellow coloration appears to have been retained. In the drone the cinnamon coloration is confined to the last two abdominal segments, the others being yellow except for a narrow cinnamon band. This is apparently the only variety, of the European honeybee at least, in which the abdominal tip of all three castes--worker, drone, and queen--bears no black. While the abdomen of the three castes is densely covered with whitish hairs, these hairs are so dense on the third, fourth, and fifth abdominal segments of the worker as to form a prominent white band on each. In the drone long white hairs form a conspicuous band on each of the last two abdominal segments. The head of each individual bears an abundance of yellow hairs. The stock is being isolated from the progeny of an imported Italian queen of unknown parentage or mating. She bears a cordovan thorax but produces only 16 percent of worker offspring with cinnamon coloration on their abdomens, whereas matings have been obtained at Beltsville this summer that have resulted in all progeny showing this character. Her drones bear the type coloration, however. Yellow face coloration was found at the laboratory in other stock several years earlier, and some drones with cinnamon abdomens were also observed previously; the cordovan-thorax character has apparently not been reported before.

IDENTIFICATION AND CLASSIFICATION OF INSECTS

Bathyplectes tristis (Grav.) recovered for third time.--On October 28, 1941, at Seven Fountains, Shenandoah County, Va., J. F. G. Clarke captured a female specimen of Bathyplectes tristis, an ichneumonid parasite of the clover leaf weevil (Hypera punctata (F.)). In 1912, 580 cocoons of B. tristis and approximately 6,100 cocoons of H. punctata, some of which may have yielded parasites, were received from Italy, a part of the lot being kept in Washington, D. C., and the remainder sent to the Salt Lake City laboratory. The notes on the Washington lot record the rearing of a considerable number of adults but do not mention the release of specimens, although the host species was notably abundant in Potomac Park the same year. The species was not released from the Utah laboratory; however, on March 30, 1932, L. D. Anderson took 2 specimens at Norfolk, Va., and in 1935 the species was reared in considerable numbers at Arlington Farm, Va., by F. F. Dicke. The collection of the specimen by Mr. Clarke is the third record of its recovery.

Central and South American Diptera added to National Collection.--Henry W. Kumm, of the International Health Division of the Rockefeller Foundation, recently presented to the National Museum 118 mosquitoes from Costa Rica, El Salvador, and British Honduras.

Fifty-nine species in 15 genera were represented. Although only 1 species was new to the collection, a number of the others had previously been represented by only a few specimens. During the past year John Lane, of the Instituto de Higiene de Sao Paulo, Brazil, determined our unnamed specimens of the genera Dixa, Chaoborus, and Corethrella and, in exchange for certain paratypes retained, sent paratypes of other species from his collection The returned material consisted of 151 specimens of 30 species, 25 of which were new to the National Collection. Seven holotypes, 3 allotypes, and 33 paratypes were included, making this a noteworthy addition.

A litter of pigs killed by ants.--A series of specimens of the native ant Formica truncicola integra Nylander was sent in recently by B. B. Fulton, of the University of North Carolina. He reported them as very abundant on a farm near Mount Olive, in the coastal-plain area of North Carolina. They were nesting in wood and had built nests at the bases of trees, stumps, and posts, covering the nests with small twigs, pine needles, and other debris. The ants are vicious, and it is reported by the farmer on whose land the colonies were found that a litter of pigs was killed by them. Another authentic report on this species concerns a small child, at Bells, Tenn. The child was almost completely blinded by the ant, which attacked especially the eyes

Web-spinning psocid found in Florida.--Specimens of Archipsocus nomas Gurney were submitted in July by W. V King, who found the species abundant at Orlando, Fla. Mr. King reported that the trunk and lower limbs of an oak tree, up to a distance of 20 or 25 feet above the ground, were almost completely covered with the webbing formed by the psocids. This species was described in 1939 (Wash Acad. Sci. Jour., v 29, No. 11) from material collected at New Orleans by T. E. Snyder The latter reported that the psocids made unsightly webs on trees in various parks and streets of New Orleans and along the Gulf coast of Mississippi. A. nomas is apparently widely distributed in the Southeastern States, and in favorable seasons the webs may be expected to attract considerable attention. The genus Archipsocus occurs principally in Central America and South America, but at least one species is known from Ceylon and Singapore. The web-spinning habit has been reported for several of the species.

Solubea pugnax (F.) damaging sorghum.--D. E. Howell, of the Oklahoma Agricultural College, Stillwater, submitted some pentatomids for determination, with the statement that these bugs seem to be doing considerable damage to sorghum at Lawton, Okla. The specimens were identified by H. G Barber as the rice bug (Solubea pugnax (F.)).

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150TH ANNIVERSARY OF THE BILL OF RIGHTS

DECEMBER 15, 1941

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The American Bill of Rights was ratified on December 15, 1791. The Sesquicentennial Anniversary is celebrated throughout the Nation in accordance with a Joint Resolution of Congress and a Proclamation of the President.

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